South East Coast
Operational Delivery Networks
Hosted by Medway Foundation Trust

South East Coast Neonatal Network

Pathway of care for the Management of the Extremely Pre Term Infant.

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Extreme Preterm Pathway – all SEC Neonatal Network Units.

The purpose of the pathway is to ensure there is a consistent approach to the management of all mothers and babies across SEC neonatal services. Ideally all deliveries expected at 26 weeks or below should occur in an obstetric led maternity unit with a co-located NICU.

The recent publication by the South East Strategic Clinical Network: Reducing Preterm Birth- Recommendations for the South East region recommends that each trust should have a named Obstetrician and Midwife to lead on preterm birth prevention; they should be involved with potential deliveries below 26 weeks in an advisory role.

The Pathway flowchart consists of two columns; the first column (blue) is the actions proposed by the Obstetric & Maternity team, the second column (amber) is the actions proposed by the Neonatal team.

Effective and positive outcomes are more likely with a team approach; all neonatal units should be aware if there are women at 26 weeks or below likely to deliver, there should be daily discussion between maternity and neonatal services. Outcomes are proven to be better if deliveries occur at NICU's.

Neonatal services operate within a network, as required by NHS England E08/S/a April 2015. South East Coast Neonatal Network; covers Kent, Surrey & Sussex and includes the following units:

Neonatal Intensive Care Units taking all gestation & levels of care:

Medway Maritime Hospital, Gillingham, Kent
Royal Sussex County Hospital, Brighton, Sussex
St Peter's Hospital, Chertsey, Surrey
William Harvey Hospital, Ashford, Kent

Local Neonatal Units taking 27 weeks upwards:

East Surrey Hospital, Redhill, Surrey
Frimley Park Hospital, Frimley, Surrey
Tunbridge Wells Hospital, Tunbridge Wells, Kent

Special Care Units taking 31 weeks upwards:

Conquest Hospital, Hastings, Sussex
Darent Valley Hospital, Dartford, Kent
Princess Royal Hospital, Haywards Heath, Sussex (34 weeks)
QEQM Hospital, Margate, Kent
Royal Surrey County Hospital, Guildford, Surrey
Worthing Hospital, Worthing, Sussex

All Trusts should be ensuring that their maternity criteria for in-utero transfer reflects the level of neonatal care available at their unit. Across SEC all deliveries at 26 weeks & below should occur at an Obstetric led maternity unit with co-located NICU.

Pathway for Management of babies born extremely Preterm below 26 weeks.

Available to print as wallchart

Gestation	Obstetric / Maternity	Neonatal
Below 23 weeks	Obstetrician & midwives would speak to parents & support following delivery.	Neonatal team would not be involved
	Information booklet for 20-22 weeks	
	Resuscitation & in-utero transfer would not normally be offered. In-utero transfer may be considered at 22+6 weeks to avoid ex-utero transfer.	
23 – 23+6	Obstetric & Neonatal team to speak to parents prior to delivery	Meet parents with obstetric team prior to delivery
	Information booklet for 23-24 weeks	Consultant present at delivery
	Offer antenatal steroids and Magnesium Sulphate	Assessment & care consistent with parent's wishes
	Place of delivery: NICU. Discuss transfer if not co-located alongside a NICU service; discuss with consultant obstetricians at Network NICU	Assessment to include: HR, spontaneous respiratory effort, response to initial resuscitation, areas of bruising.
	Caesarean section – rarely indicated. Usually if maternal indications	Senior staff to update parents asap following delivery
		If delivery is not at a NICU, call EBS for transfer.
24 – 24+6	Obstetric & Neonatal team to speak to parents prior to delivery	Meet parents with obstetric team prior to delivery
	Information booklet for 23-24 weeks	Consultant present at delivery
	Offer antenatal steroids and Magnesium Sulphate	Normal practice should be full invasive intensive care & support. Resuscitation followed by reassessment.
	Place of delivery: NICU. Ideally at co-located NICU, if not transfer for optimal outcome after discussion with consultant obstetricians at Network.	Assessment to include: HR, spontaneous respiratory effort, response to initial resuscitation, areas of bruising.
	Caesarean section – rarely indicated	Senior staff to update parents asap following delivery
		If delivery is not at a NICU, call EBS for transfer.
25 – 25+6	Obstetric & Neonatal team to speak to parents prior to delivery	Meet parents with obstetric team prior to delivery
	Information booklet for 25 weeks	Senior medical staff at delivery
	Offer antenatal steroids and Magnesium Sulphate	Normal practice should be full invasive intensive care & support
	Place of delivery: NICU. Ideally at co-located NICU, if not transfer for optimal outcome after discussion with consultant obstetricians at Network	Assessment to include: HR, spontaneous respiratory effort, response to initial resuscitation, areas of bruising.
	Caesarean section – consider for fetal compromise	Senior staff to update parents asap following delivery
		If delivery is not at a NICU, call EBS for transfer.

SEC Outcomes data: from BadgerNet Neonatal database reports

Outcome	Year	23	24	25	26
Home	**2010**	3 /12 *25%*	14 /27 *52%*	10/19 *53%*	27/34 *79%*
	2011	1 /13 *4%*	14/36 *39%*	25/36 *69%*	27/41 *66%*
	2012	3/14 *21%*	17/30 *57%*	21/37 *57%*	37/49 *76%*
	2013	4/11 *36%*	17/32 *53%*	22/34 *65%*	29/35 *83%*
	2014	11/24 *46%*	19/29 *66%*	20/29 *69%*	38/45 *84%*
	2015	10/17 59%	27/40 68%	20/25 80%	35/48 73%
Died	**2010**	9/12 *75%*	11/27 *40%*	6/19 *32%*	6/34 *18%*
	2011	11/13 *85%*	21/36 *58%*	8/36 *22%*	8/41 *20%*
	2012	10/14 *71%*	11/30 37%	14/37 *38%*	6/49 *12%*
	2013	7/11 *64%*	12/32 *38%*	9/34 *26%*	2/35 *6%*
	2014	12/24 50%	7/29 *24%*	5/29 *17%*	5/45 *11%*
	2015	7/17 42%	11/40 27%	1/25 4%	8/48 17%
Unknown	**2010**	0	2/27 *7%*	3/19 *16%*	1/34 *3%*
	2011	1/13 *7%*	1/36 *3%*	3/36 *8%*	6/41 *15%*
	2012	1/14 *7%*	2/30 *6%*	2/37 *5%*	6/49 *12%*
	2013	0	3/32 *9%*	3/34 *9%*	4/35 *11%*
	2014	1/24 *4%*	3/29 *10%*	4/29 *14%*	2/45 *4%*
	2015	0	2/40 5%	4/25 16%	5/48 10%
Unknown outcome - Went to Children's ward or returned to local hospital, unable to trace, were alive when discharged from neonatal care					

EPICURE 2: results 2006

Gestational age at birth Population	22 weeks	23 weeks	24 weeks	25 weeks	26 weeks
Alive at the onset of labour	272	416	495	550	594
Livebirth	152	339	443	521	580
Livebirth with intended care *	41	284	427	514	576
Admission for neonatal care	19	217	382	498	571
Deaths in Neonatal care	16	151	204	152	123
Deaths after discharge home	0	3	1	5	1
Survivors to 3 years of age	3	63	177	341	447
Survivors with severe disability §	*1*	*17*	*37*	*57*	*45*
Survivors with moderate disability §	*1*	*14*	*33*	*48*	*54*
Survivors without disability §	*1*	*32*	*107*	*236*	*348*
Survival					
from onset of labour	1%	15%	36%	62%	75%
of livebirths with intended care *	7%	22%	42%	66%	78%
of admissions for neonatal care	16%	29%	46%	69%	78%
Survival without disability					
from onset of labour	0·4%	8%	22%	43%	59%
of livebirths with intended care *	2%	11%	25%	46%	60%
of admissions for neonatal care	5%	14%	28%	47%	61%

Reporting:

1. SEC Neonatal Network will be reporting Place of Delivery for babies below 27 weeks as a Quality Indicator on the SEC Neonatal Network Dashboard; units that are RAG rated red in any of the indicators that apply to the EPT Pathways will be followed up by the Network Manager.

2. For 2016/17 Quality Indicators: Antenatal Steroids given (NNAP), Magnesium Sulphate given (NNAP), and Place of delivery for babies below 27 weeks (Exception report form required).

Recommendations:

1. All Trusts to implement the SEC Neonatal Network Pathway for Management of babies born extremely Preterm below 26 weeks:
2. All Trusts to make changes to local guidance if required; all Trusts will have been operating their neonatal services within network pathways since 2010 so no changes expected by SEC Neonatal Network.
3. All Trusts to introduce the Parent Information booklets to support discussions with parents.
4. All Trusts to circulate the SEC Neonatal Network Pathway within their services and Maternity & Neonatal Governance meetings.
5. All Trusts who undertake a resuscitation of an EPT baby to complete an audit form and maintain an annual audit register of these babies to enable the Neonatal Network to undertake annual review of use of ECM and drugs with outcomes.

Additional tools:

Extreme Preterm Pathway flowchart – this can be printed in A3 to use within clinical settings.
Parent Information booklets – 20-22 weeks, 23-24 weeks, 25 weeks.
These have been adapted from the Thames Valley & Wessex Neonatal Network booklets which were published November 2015; we have permission to use this format.
EPT audit form – one form to be completed for each resuscitation.

References:

NICE NG25 Preterm labour and birth (November 2015)
SEC SCN Reducing Preterm birth – recommendations for the South East region (December 2015)
EPICURE 2: 2011
Management of babies born extremely preterm at less than 26 weeks: a framework for clinical practice. BAPM 2008
Critical care decisions in fetal & neonatal medicine: ethical issues. Nuffield Council on Bioethics 2006
National Neonatal Audit Programme: measures 2016. RCPCH 2016
NHS England E08/S/a Neonatal Critical Care service specification April 2015

Appendix 1

Principles for consideration in Resuscitation

In 22+0 -22+6 weeks, the general principle is non-resuscitation.

In 23+0 -23+6 weeks, deciding not to start resuscitation is an appropriate approach particularly if parents have expressed this wish

In 23+0 -24+6 weeks, Consultant presence at delivery and involvement wherever possible.

It is important to emphasize on correct tube position and effective ventilation, warning that PediCap or similar may be very slow to change colour in a small baby in a resuscitation scenario, so the value of having senior staff present is undoubted.

The use of saturation monitor to check the heart rate and saturation can be helpful to assess and monitor progress.

The role of external cardiac massage (ECM) and adrenaline (epinephrine) in resuscitation of the extremely preterm infant remains uncertain and therefore controversial.

A baby at 23-24 weeks remaining bradycardic despite effective ventilation, this would be considered a poor prognostic situation. It would be impossible to dictate, in a guideline, the use/non-use of adrenaline in this situation, and teams will have to rely on clinical judgement and prior expertise, as well as the availability of intravenous access. There is therefore no expectation for the use of adrenaline.

The same principle also applied for External Cardiac Massage (ECM), however, ECM may be considered in bradycardia (<60 bpm) whilst effective ventilation via endotracheal tube is being established, and ECM should be no more than 10 minutes. Not doing ECM in bradycardia without response to effective ventilation is also an acceptable principle. ECM for asystole without response to effective ventilation is not advisable before 25 weeks.

A competent resuscitation of 10-15 minutes would be sufficient chance for the senior clinician to determine if the baby's survival is realistic, and longer resuscitation than this is likely to have no benefit.

From 25 weeks, it may be reasonable to consider the use of ECM and adrenaline. However, again, the very limited evidence and experiences mean that senior clinicians will need to make decisions on a case-by-case basis and should look for evidence of progress during the resuscitation. A decision to stop resuscitation should be reached within 15 minutes of birth if there is no progress clinically during the resuscitation.

Engagement process:

This document was produced following the SEC Neonatal Network conference November 2015, there was a request to produce a single network pathway with consistent information for clinical teams and facts for parents based on national and local outcomes data.

This document was circulated to all neonatal teams and to Heads of Midwifery in February 2016, feedback was received from several trusts, changes were made to the document. There was engagement with the NICU neonatal clinical leads to finalise an additional appendix which was agreed to give clinical guidance on resuscitation for the extremely premature infant.

Document control:

Date	Sent to / comments	Action
08/01/16	V1 to AS & PR both sent comments	Changes made v2
22/01/16	V2 to AS & PR several additions to flowchart	Changes made v3
15/02/16	V3 to AS & PR , v3 agreed 17/02/16 by AS	
19/02/16	Draft v3 circulated to all units, SE SCN and HoM comments due by 30/03/16	Several comments received v4 produced
23/05/16	V4 to AS & PR	Comments from PR 24/05/16
28/06/16	Revised v5 discussed by AS/PR/VA	Area of discussion is whether to include guidance for resuscitation including ECM & drugs.
11/07/16	D/W NICU leads	Final 12/07/16